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ABSTRACT

This case study is one of a series on academic computing at minority institutions which is designed to assist educators at other such institutions in identifying academic computing needs, establishing realistic goals, organizing a staff, and selecting materials. Following a brief description of the purpose and background of the overall study, the report profiles Florida A&M University in Tallahassee, a coeducational, urban, 4-year institution with a student enrollment in 1980-1981 of approximately 5,400 students. The 14-year computing history of the institution is summarized and the decentralized organization and management system is described. The report explains facilities available; and procedures for using a timesharing minicomputer at the Academic Computing Center, a microcomputer laboratory in the data processing department, and a computer center in the school of architecture are described under the topic of access to computing resources, covering both student and faculty access. Also addressed are the data processing program applications, computer literacy, advice, and contacts. A table displays data on students majoring in data processing, technology curriculum for data processing, and enrollment projections for data processing department majors. (LMM)

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# *Academic Computing at Florida A&M University*

## *A Case Study*

**Beverly Hunter and Greg Kearsley**

1982

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# *Academic Computing at Florida A&M University*

## *A Case Study*

# Purpose

This book is one of a series of Case Studies of Academic Computing at minority institutions. These Case Studies are intended to assist educators at such institutions perform the following activities:

- Identify academic computing needs.
- Establish realistic goals for instructional computing.
- Organize and staff a computer center.
- Select appropriate computer hardware and software.
- Make computer resources more accessible to students and staff.
- Extend computer applications in particular courses and disciplines.
- Establish or improve a computer science curriculum.
- Raise the general level of computer literacy on campus.
- Share facilities, expertise, or curricular materials within the college community or with other institutions.
- Make personal contacts with experts at other institutions.
- Prepare a plan for academic computing.

# Background

Computers and related technology provide important opportunities for minority institutions to help their historically disadvantaged students to become equal members of modern society. By using computer-based instructions, students can get individualized help in catching up on basic skills. By learning and applying computer-related skills, students strengthen their career potential.

Despite the clear advantages to minority institutions of employing computer technology, these institutions have in fact been slower to adopt the technologies than most majority institutions.

A number of studies,[1,2] have examined the status and needs of academic computing at minority institutions. These studies suggest that while minority institutions are catching up to non-minority institutions in terms of computing facilities and activities, there are some significant inequities. For example, minority institutions are significantly lacking in computer science programs and the staff to provide them: in 1976/77, only 35 of 228 minority institutions had computer science programs.

Much of the progress made in academic computing at minority institutions during the past decade has been due to federal funding. Two programs in particular have been critical: AIDP (Advanced Institutional Development Program) of the Office of Education, HEW; and MISIP (Minority Institutions Science Improvement Program) of the National Science Foundation. The two programs have supported equipment acquisition, facilities, and curriculum development, as well as research projects.

A particularly valuable contribution to progress in minority computing was the ECMI (Educational Computing in Minority Institutions) funded by the National Science Foundation's Science Education Directorate. ECMI sponsored conferences and summer workshops which enabled 921 college faculty and staff (including 56 presidents) to learn about and discuss the potentials of academic computing at minority institutions.

This case study project is an attempt to identify some minority institutions which demonstrate elements of successful academic computing. These case studies are intended to help the administrators, faculty, and staff of other minority institutions to

[1]Lewis, J. et al. Computing in minority institutions: 1976/77. *The fourth inventory of computers in higher education*. Praeger, Colo., 1980.

[2]Marshall, P. *Instructional computing in minority institutions: a needs/strategy assessment*. (Final Report). NSF Grant 7821515, 1979.

plan and implement successful computing projects, building on the experiences of these case study institutions.

The minority institutions selected for these case studies include Jackson State University, Bennett College, Community College of Baltimore, and Florida A&M University. While these institutions vary widely in size, environment, history and academic programs, they do share certain common missions and problems. The case studies address some of the problems and ways the institutions have attempted to overcome them.

The case study project and other studies of minority institutions,[3] have identified the following key factors leading to successful use of computers to improve learning and teaching in minority institutions.

(1) Dedication on the part of key faculty and administrators.

(2) Support of top administration.

(3) Campus-wide planning—beyond walls of a single department.

(4) Ability to put together funds from various sources.

(5) Careful budgeting practices.

(6) Ability to learn from own or others' experiences.

(7) Desire to get as much mileage as possible from available resources.

(8) Innovative approaches and continued efforts towards solving the problem of acquiring adequate staff and faculty.

[3]Marshall, P. Academic computing: a sample of approaches in minority institutions. *Proceedings of the National Educational Computing Conference, Iowa City, 1980.*

# Profile

Florida A&M University (FAMU) is a coeducational, urban four-year institution originally founded in 1887. FAMU is one of the nine state-supported universities. It is under the supervision of a Board of Regents, a body of nine citizens appointed by the Governor.

## LOCATION

FAMU is located in Tallahassee, capital of Florida, and the site of two other institutions of higher learning. It sits atop the highest of the Seven Hills of Tallahassee and comprises about 15 major academic buildings on 419 acres.

## PROGRAMS

The University is divided into seven colleges and schools: Education, Humanities and Social Sciences, Science and Technology, Architecture, Business and Industry, Nursing, and Pharmacy. FAMU offers degrees in 15 different areas.

## MISSION

The University is a general purpose institution with curricular offerings in most of the arts and sciences, business and education at the baccalaureate level and in some master's degree programs, as well as some technological and professional programs. The University is committed to four goals:

- To prepare students to serve in a variety of professional and occupational pursuits consistent with the current and projected manpower needs of the state and nation.
- To prepare students for effective community leadership and service.
- To provide services which bring knowledge to focus on societal problems with particular emphasis on rural and urban living.
- To perform that research relevant to the solution of human problems affecting society in a variety of ways.

## FACULTY

During the 1980/81 academic year, the full-time instructional faculty numbered 301. Approximately 40% of the faculty hold a doctoral degree and 45% hold a master's degree.

## STUDENTS

Student enrollment at the begining of the 1980/81 academic year was approximately 5,400 students. Of these, about 86% were enrolled full time. Four percent were enrolled at the graduate level.

Most of the FAMU students are Florida residents. In 1980/81, 16% were from out of state. The student population is approximately equally divided into males and females. About 88% of the students are black.

The approximate school and college enrollments are:

| | |
|---|---|
| Science and Technology | 895 |
| Humanities and Social Sciences | 800 |
| Education | 703 |
| Business and Industry | 691 |
| Nursing & Pharmacy | 373 |
| Architecture | 253 |

## TUITION AND FINANCIAL AID

In 1980/81, tuition was $771 for two semesters (3 quarters) for Florida residents, and $2151 for out-of-state residents.

Tuition at FAMU depends upon the number of credit hours taken. For an average load of 12 credit hours, 1981-82 tuition fees were $324 per semester ($924 for out-of-state) for undergraduates and $444 per semester ($1,260 for out-of-state) for graduate students.

Tuition contributes approximately 13 percent of the university's total budget. About 8 million is provided in financial aid, primarily from BEOG grants. Approximately 80 percent of FAMU students receive some form of financial aid.

## ACCREDITATION

The University holds membership in the Southern Association of Colleges and Schools, the American Council on Education, the American Association of Colleges for Teacher Education, the Association of Colleges and Secondary Schools, the National League of Nursing, the American Association of Colleges of Pharmacy, and the Engineers Council for Professional Development. The University is also fully accredited by the Florida Department of Education, Florida Board of Pharmacy, and the Florida Board of Nursing.

## BUDGET

The total budget of FAMU is approximately $24 million. The budget funds are primarily from the Florida Legislature as well as tuition, general and incidental revenue.

# Fourteen Years of Computing

Academic computing began at FAMU in September 1967, with a 2-year Data Processing program in the Vocational-Technical Institute. In 1969, the Institute was converted to the School of Technology with an upgrade of all curricula to 4-year programs. The data processing program was housed with programs in electronics and computer electro-mechanics. Today, the Department of Data Processing is part of the College of Science and Technology.

The following chronology highlights the significant events that have led to the present state of academic computing at FAMU.

**1967:** Data Processing program started (2 year program)

**1969:** Data Processing program becomes 4 year program.

**1970:** IBM 1130 acquired (8K with disk). Used for both academic and administrative activities.

**1972:** IBM 1401 acquired for administrative computing.

**1973:** State Board of Regents provide funds for use of Florida State University computer.

COSIP Grant for Computing in Mathematics.

**1975:** Data 100 remote job entry terminal provides access to regional data centers.

Title VI grant allows acquisition of 12 terminals used for math and BASIC on the Florida State University computer.

**1976:** CAUSE grant to Florida university consortium.

FAMU Math department develops computer curriculum in BASIC.

Dr. Mason participates in ECMI (Educational Computing in Minority Institutions), sponsored by National Science Foundation.

**1978:** Thomas Mason becomes Chairman of Data Processing Department.

**1979:** Harris 123 minicomputer system with 20 ADM-3A terminals acquired.

**1981:** Microcomputer lab opened with 20 Apple microcomputers and 6 printers. Emphasis placed on interactive graphics. PASCAL replaces RPG.
Digital Equipment Corporation donates 10 LSI-II microprocessors and Decwriters.

# Organization and Management

The Chairman of the Data Processing Department also serves as Director of the Academic Computing Center. The timesharing computer in this center is used by some academic departments other than the Data Processing Department. The center has no staff other than the faculty of the Data Processing Department. No support services are available to faculty in other departments who might need assistance in locating or developing programs, acquiring microcomputers or terminals, or learning how to use the computer in their teaching or research.

Academic computing has always been fairly decentralized, and this trend will continue as more departments and individual faculty are able to acquire their own hardware and software.

There are no campus-wide users committees or policy committees for academic computing.

## COSTS AND BUDGETS

The annual budget for academic computing is about 9% of the total FAMU computing budget. In 1980/81, the annual budget for academic computing was $60,000. Approximately $12,000 was spent on the rental of the Data 100 RJE System, $10,000 for supplies, and $38,000 for timesharing services from Florida State University and the Northwest Regional Data Center.

The 1981 budget is still $60,000. Of this $28,000 is spent for use/purchase of the Harris 123, $21,500 for computer and terminal maintenance, $5,200 for paper and supplies, and $2,800 for the link to the regional data center.

The Florida State Board of Regents has a Division of Electronic Data Processing which establishes policies in academic computing in the State universities and must approve all equipment acquisitions.

# Access to Computer Resources

This chapter describes the computer resources available to students and faculty for teaching, learning, and research. Computer resources include computer hardware, software, data bases, and documentation. Accessibility of such resources to students and faculty depends upon such things as number and location of terminals or personal computers, policies and priorities for various users and applications, scheduling, availability of technical assistance, and ease of use (sometimes referred to as "friendliness") of the operating system software.

Students and faculty at FAMU have access to the following computers:

- a timesharing minicomputer at the Academic Computing Center
- a microcomputer laboratory in the Data Processing Department
- a computer center in the School of Architecture

## TIMESHARING MINICOMPUTER

A Harris S123 timesharing system was acquired in 1979. It includes:

S123 central processing unit with 128K memory
300 megabyte disk drive
1 tape drive
printer—300 lines per minute
communications processor and multiplexor

The timesharing system is accessed through 20 terminals located in the Data Processing Departments and 2 dial-up lines. It is used primarily by Data Processing students but also by students and faculty in Mathematics and Social Studies.

Software on the Harris minicomputer includes:

VULCAN Operating System
FORTRAN, BASIC, COBOL, PASCAL
SPSS

Documentation to help users locate needed software and operate the system includes a set of "How To" aids on the following topics:

How to create a file from a terminal
How to run a FORTRAN program using FORGO
How to run a COBOL program

Minicomputer Laboratory

How to run a FORTRAN program using FORTRAN-77
Generation of random numerical test data
How to submit FORTRAN and COBOL programs
A recommended style of report writing

Students in Data Processing courses have easiest access to the terminals since terminals are located in the Data Processing Department. This reduces the accessibility of the computer by students and faculty in other departments. However, there are no formal policy restrictions on use by any students or faculty.

The Computer Center is open about 100 hours per week.

Microcomputer Laboratory

## MICROCOMPUTER LABORATORY

The microcomputer laboratory has 20 Apple II personal computers, each with 43K random access memory, disk drive, PASCAL language card, and SONY color monitor. The Apples share 6 printers. This laboratory is also located in the Data Processing Department and is used primarily by students in data processing courses. The lab is open to all students 14 hours per day. Students on work study programs serve as proctors in the lab.

New work stations in the lab have the keyboard at typing height and the monitor inclined in front of the student. The goal for the micro-lab is to have a room that "looks like an art gallery that happens to have computers."

## SCHOOL OF ARCHITECTURE

The computing center in the School of Architecture consists of the following:

Hardware

(a) A PDP-15 System with:
- 2 hard disk drives
- 3 tape drives
- 3 terminals
- 1 electrostatic printer
- 1 digitizer
- 1 card reader
- 1 card punch

This system has a high-resolution graphics capability and is used mainly for teaching students how to use architecture graphics software.

(b) 3 Apple Microcomputers with:
- 48K memory
- a light pen
- 1 printer

The Apples are used to develop in architecture students an appreciation of the potential for applications related to architecture.

(c) LSI-11 System with:
- 28K CPU
- teletype
- video terminal
- 2 8-inch disk drives

The software consists of system and application programs, instructional information on video cassette tapes to explain the usage of the equipment, and a word procesor for the Apple computers.

## EXTERNAL COMPUTERS

The Harris system is linked to the Northwest Regional Data Center and through that computer to a statewide network of Regional Data Centers.

## USAGE OF COMPUTER CENTER

Demand for computer time by Data Processing majors has grown as the curriculum shifts away from a lecture orientation with supplementary program assignments to a project orientation. This approach uses texts, manuals and other references with the student-instructor interaction built around a written project report with oral presentations.

The computer demand by mathematics students is also growing due to the popularity of the service courses, a basic skills remediation program, and the development of scientific computing. Microcomputers are seen as a potential way of dealing with the increasing demand for computing. As the demand grows, more microcomputers can be acquired.

Long-range plans call for connecting personal computers in networks to allow for sharing of resources such as hard disks and software, and to allow communications among users.

# Data Processing Program

The Data Processing degree program is administered by the Department of Data Processing Technology in the College of Science and Technology. The program began in 1967 as a two-year vocational program in the School of Technology, and has changed radically since that time.

The program is designed to produce competent graduates with a practical orientation who can make an immediate contribution in industry and government organizations as programmers and analysts. The curriculum is project-oriented, with students required to carry out all phases of analysis, design, and programming, and to communicate their results in written and oral form.

There were 350 majors in the 1981-82 academic year. The number of majors has grown at about 17 percent annually since the early 1970's, as indicated in Table 1.

| | |
|---|---|
| 1972-73 | 67 |
| 1973-74 | 74 |
| 1974-75 | 83 |
| 1975-76 | 93 |
| 1976-77 | 115 |
| 1977-78 | 107 |
| 1978-79 | 142 |
| 1979-80 | 203 |
| 1980-81 | 255 |
| 1981-82 | 350 |

Table 1. Students Majoring in Data Processing Technology

## CURRICULUM

The curriculum has three main phases:

Phase I (freshman year). The student is introduced to structured programming in BASIC. The student uses interactive computer graphics on microcomputers as a means of becoming familiar with the technology and programming. Graphics have proven to be an important pedagogical aid. When students are developing a project

with graphic output, they can visualize the output they want. They are interested in revising and improving their output. In contrast, beginning students were less interested in the numeric output of computational programs.

Phase II (sophomore year). The student further develops competence in structured programming through the languages PASCAL, FORTRAN, and COBOL. Graphics-oriented projects are being encouraged.

Phase III (junior and senior years). The student learns basic design principles of hardware and software. Year-long sequences are taken in:

Operating Systems and Assembler Language
Microprocessor Design and Topics
Database Management
Operations Research
Software Design and Development

Each sequence builds on a series of projects programmed and documented by students. The students make oral and written presentations on their work.

Courses on computer architecture and design in small (i.e., microcomputer) and large-scale systems are offered by the Electronics Engineering Technology Department for juniors.

| | FALL SEMESTER | | SPRING SEMESTER | |
|---|---|---|---|---|
| Freshman | English I | (5) | English II | (5) |
| | Algebra I | (3) | Finite Math | (3) |
| | BASIC I | (3) | BASIC II | (3) |
| | Critical Inquiry | (3) | Introduction to Logic | (3) |
| | | | Health | (3) |
| Sophomore | FORTRAN | (3) | Data Structure (Pascal) | (3) |
| | COBOL I | (3) | COBOL II | (3) |
| | Principles of Acct. I | (4) | Prin. of Acct. II | (4) |
| | Basic Economics I | (3) | General Psychology | (3) |
| | Physical Science Elective | (4) | Biological Science Elective | (4) |
| Junior | Database Management | (3) | Advanced Database Management | (3) |
| | Operating Systems | (3) | Assembler | (3) |
| | Microprocessor Design | (3) | Microprocessor Topics | (3) |
| | Prin. of Management | (4) | Statistics | (3) |
| | Report Writing | (5) | Industrial Psychology | (3) |
| Senior | Simulation | (3) | Decision Support System | (3) |
| | Systems Design | (3) | Data Processing Project | (6) |
| | Electives | (6) | Elective | (3) |

Table 2. Curriculum for Data Processing

## RESEARCH

Plans have been developed to establish a Center for Microcomputer-based Research. The Center would serve as the research arm of the department and as an "umbrella" to expedite interdisciplinary research. Current topics being considered for proposals are:

- development of a textbook to teach programming with graphics projects rather than numeric projects
- use of microcomputer-controlled videotape for instruction
- development of an easy-to-use and extensible relational database management system
- development of an advisement system to help students with course selection, registration and transfers
- development of a report writing system which would help students in writing reports from outline shape through analysis of content
- development of a test databank on the Harris 123 minicomputer

The Center would provide the following services for the Department:

- Summer employment for faculty.
- Year-long employment for students not qualifying for work study.
- Acquisition of equipment and exploration of new software techniques.
- Seminars and visiting appointments for specialists outside the University.
- A way to form mutually beneficial relationships with other departments at FAMU and elsewhere.

## FACULTY

Dr. Thomas Mason assumed the position of department chairperson in September 1976 (he had been a faculty member at FAMU since 1973). The only other member of the department at that time had been a member of the original group of majors in Data Processing. In 1980, Ms. Barbara Black, who had been teaching part time, replaced him as a full-time member of the department. Another instructor has recently been added.

In its eleven year history, there have never been more than three full-time faculty members in the Data Processing Department, although part-time and adjunct instructors have sometimes been available. At the same time, the number of students

majoring in Data Processing has steadily increased at an average annual rate of 17%. The Data Processing Department has been chronically understaffed relative to the number of students it handles. This problem will soon become acute if student enrollment projects are accurate (see Table 3).

In order to cope with the heavy teaching load and lack of adequate staff, the possibility of using computer-managed instruction (CMI) for introductory courses has been investigated. However, the resources (primarily human) needed to get a CMI system implemented at FAMU have not been available. A key component in a computer-managed instruction course is a good textbook that students can use in an independent-study manner. So far, a satisfactory text has not been found, and so the Department is undertaking the development of a suitable text.

According to Dr. Mason, the following staff additions are needed if the Data Processing program is to become a nationally rated program and take advantage of the many opportunities afforded by the popularity of the field and the practicality of the curriculum:

- Staff Assistant

  A career-service position responsible for general secretarial support of the faculty, developing and maintaining student records, assigning and monitoring student workers, providing liaison between Chairman and faculty and representatives of industry and Placement Bureau.

- FAMU Computer Center Supervisor

  A career-service position responsible for providing a first-rate computing environment with working terminals, adequate supplies, accurate utilization records, user support, etc.

- Computer-Managed Instruction Coordinator

  A career-service position responsible for organizing class sections, monitoring student progress and conducting review sessions. Will work with the Computer Center Supervisor to ensure the facilities are adequate for the needs of the curriculum.

- Additional Faculty Member

  Essential if the number of majors is to increase as projected.

| | Freshman | Sophomore | Junior | Senior | Total |
|---|---|---|---|---|---|
| 1980-81 | 170 | 27 | 39 | 19 | 255 |
| 1981-82 | 140 | 100 | 30 | 35 | 305 |
| 1982-83 | 150 | 100 | 85 | 30 | 365 |
| 1983-84 | 150 | 100 | 85 | 75 | 410 |

Table 3. Enrollment Projections for Data Processing Department Majors

## SUMMER INTERNSHIPS

About 20-25 students have completed summer internships for companies such as Champion, GTE, Aetna, Eastman-Kodak, Computer Sciences Corporation, HP, Owens Corning, and others. A plan has been developed to establish summer internships for local companies but lack of resources has prevented this from taking place.

## GRADUATE PLACEMENT

Data Processing Department graduates are highly sought after and typically receive the highest starting salaries of any FAMU graduates. It is not unusual for a graduate to have 5 or 10 job offers with Fortune 500 companies.

Former graduates are now employed at the following corporations:

Martin Marietta
Shell Oil Corp.
Harris Corp.
Sperry Univac
Boeing Computer Services
Western Electric
Cummins Engine
McDonnell Douglas
Xerox Corp.
Texaco Oil
Control Data Corp.
IBM
Bell Systems
DEC

In 1980, starting salaries for DP graduates were the highest of any FAMU major, averaging $20,000.

# Spectrum of Applications

Most of the academic computing activities at FAMU are done in the Data Processing Department. Other departments offering courses which use the computer are the Department of Mathematics and the Department of Sociology, Anthropology, and Human Services. In addition, the School of Architecture has its own computing facilities.

## MATHEMATICS

Computing in the Mathematics Department has a long history. The main contribution of the department has been to provide courses that introduce students to use of the computer. The Mathematics Department provides entry level computer skills for all students fulfilling a computing requirement in their majors or wishing to develop a minor in computing.

Three courses are presently offered to meet these computer literacy needs:

Computer Concepts
Augmented Man: Computers in Society
Computational Models and Problem Solving

About 300-400 students per year learn computer-related skills through these courses.

Three mathematical computing courses are offered: an Introductory Course, Numerical Analysis, and Finite Mathematics. Students in these courses use FORTRAN. Courses in "Principles of Computers and Programming" and "Mathematical Modeling" are proposed.

## SOCIAL SCIENCES

The Department of Sociology, Anthropology and Human Services teaches two statistics/research methodology courses in which students use SPSS to analyze data they have collected for their research projects. About 30 students per year develop computer-related skills through these courses.

The School of Architecture offers a number of courses which involve computers. A course on Computer Techniques covers computer aided architectural programming, relational planning, site and space planning. Students use the PDP 15 and ARK II programs as well as the Apple II. Another course introduces architecture students to microcomputer applications for architecture practice, industry word processing, data base management and computer programming. An advanced course teaches the use and applications of advanced graphics systems in architecture.

## PHYSICS

Two members of the Physics department (Drs. H. Jones and J. Guske) have used the computer system for their research. In particular, they developed a FORTRAN program for multiplication and division of large numbers by factorials and powers—a common computation in quantum physics.

# Computer Literacy

Florida A&M University does not have any campus-wide goals regarding computer literacy of students and faculty who are not computer professionals.

As the academic computer center has no staff, it does not offer short courses or seminars for faculty or others needing to learn how to use computer facilities.

The Department of Mathematics provides service courses in computing for students from other departments. About 300 students per year take these courses.

Several departments require their students to take computer courses as a degree requirement:

School of Business and Industry requires BASIC, FORTRAN and/or COBOL.
Political Science recommends its students learn BASIC
Sociology teaches a course using SPSS.

An estimated 10% of FAMU students use computers at some time in their studies.

# Advice

The following advice is provided by Dr. Thomas Mason, Chairman, Data Processing Department:

Microcomputers afford an inexpensive entry into computer education. They are powerful, reliable and can ultimately be linked together to form very capable networks. Micros were particularly important for us because they led us to the world of color graphics.

We now view graphics as a prime mode of instruction for all four years of the curriculum. In the freshman year, it provides a means of student selection. Our freshmen begin programming the second day of class. They give periodic presentations of graphics projects. The creativity and knowledge displayed in these presentations are major determinants of whether a student remains in the Data Processing curriculum. We are now taking steps to integrate computer graphics projects into the courses in FORTRAN, data structures, database management and decision support systems.

Microcomputers also allow easy entry into computer-based research. We are currently writing a text on computer graphics as a mode of instruction. We are also investigating the use of microcomputer-controlled videotape to present instructional material. We expect to get much more deeply involved in microprocessor design and the associated technology of networks, robotics and process controllers.

As we expand our horizons technologically, we are also attempting to change pedagogically. The department is making a concerted effort to eliminate lecturing as a mode of instruction. In the first two years, we are stressing self-study with individual projects or self-paced programming work. This approach will also incorporate videotaped lectures. For the last two years, we are moving toward group projects with heavy emphasis on oral progress reports and both oral and written final reports.

I do not believe that my institution will ever support academic computing as it should be supported. My experience with ECMI (Educational Computing in Minority Institutions) leads me to believe that FAMU is not unique in this regard. On the other hand, I fully expect to have 500 Data Processing majors within the next three years. Therefore, it seems reasonable to me that we must turn to the only reliable resource that we are ever likely to have, the computer, to provide a significant portion of instruction.

I close with the following bits of advice:

1. Do not be dismayed or discouraged by the lack of support at your institution. And do not take this as a sign of personal inadequacy.
2. Get a microcomputer and train yourself. Read the literature—particularly BYTE and Creative Computing.

3. Get a large corporation interested in providing a reasonable level of support. Don't bother with local companies, federal grants or foundations unless they are a sure thing.
4. Whatever you teach, teach well. You will be surprised at how much can be taught on a microcomputer and, of course, they can be used as terminals to use remote computers.
5. Write me if you need more details on anything that we are doing at FAMU. And, remember that almost all blacks who will enter the computer profession will be trained at predominantly black schools. We cannot give up the struggle.

# Contacts

| | |
|---|---|
| Dr. Thomas Mason | Data Processing Department |
| Ms. Barbara Black | Data Processing Department |
| Dr. Donald Hill | Mathematics Department |
| Dr. Jeffrey Jacques | Department of Sociology, Anthropology and Human Services |
| Dr. Eric Holst | School of Architecture |
| Dr. James Guske | Physics Department |

# Foreword

This book was prepared by the Human Resources Research Organization and supported by the National Science Foundation, Minority Institutions Science Improvement Program, Grant Number SER-7914601. Beverly Hunter is the Principal Investigator. All opinions, findings and conclusions are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Ms. Barbara Black and Dr. Thomas Mason of the Department of Data Processing Technology gathered the information that is presented in this book.